Aviation Human Factors Industry News

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Hello all,
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In this weeks edition of *Aviation Human Factors Industry News* you will read the following stories:

Rush to Judgment - As the Wrench Turns by John Goglia

For an accident investigator, the high pitched beep beep beep of the pager going off was never a welcome sound. That it was going off just midnight East Coast time meant the accident was bad. Bad enough that the NTSB Center in Washington, D.C. couldn't hold notification until morning. It was February 16, 2000; the initial report to the Go Team was a cargo plane had crashed on take off from Mather Field in Sacramento, California. The words were scrawled across the alphanumeric pager that was the height of technology in those years. An update shortly thereafter, identified the aircraft as an Emery DC-8 cargo jet.

As an NTSB Board Member from 1995 to 2004, I was beeped on every significant transportation incident – planes, trains, buses, trucks and boats – whether I was on call or not. My role was to investigate accidents and determine probable cause. Determination of probable cause was of critical importance – if we got the probable cause wrong, our future fixes wouldn't be right. And another accident could occur.

A Board Member was designated as the on-scene spokesperson for every major accident. On this day, I was not the member on call but because of my aviation background, I was particularly interested in aircraft accidents. And here I had a personal interest, as well: as an FBO operator years before, I had provided contract services to Emery and knew many of their crews. I asked the Command Center to keep me posted.

Through the night, I was called as more information flowed in. The aircraft, en route to Dayton, Ohio, had crashed into an outdoor auto salvage yard and exploded on impact. Secondary fires ignited and hundreds of cars on the lot exploded. By morning, the sad news that all three crew members were confirmed dead. Miraculously, no one on the ground was hurt.

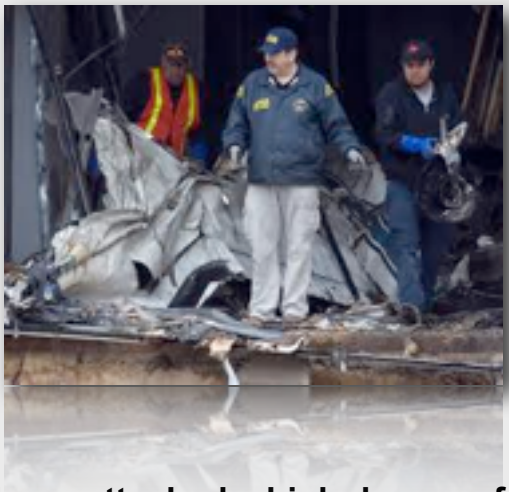
Within 24 hours, the air traffic control tapes were reviewed and indicated that the pilot had reported balance problems seconds after take off. Conjecture was that the cargo aircraft was improperly loaded and the focus of the investigation narrowed in that direction. Adding to the initial hypothesis was the knowledge of an earlier crash of a Fine Air DC-8 cargo aircraft moments after lift off from Miami International Airport.

There the probable cause was determined to be an improperly secured load that shifted on take off causing an extreme tail heavy condition. The aircraft stalled and crashed just outside the airport perimeter.

For months after the Emery accident, investigators focused on how the aircraft was loaded and how the load might have shifted. The investigation was hampered by the location of the accident – burnt aircraft parts were intermingled with burnt automobile parts. But it was also hampered by the initial fixation on aircraft loading as a primary factor. As investigatory leads failed to pan out, a flight data recorder (FDR) engineer on his own initiative decided to compare the FDR data from this accident with data from the earlier Fine Air accident. That comparison indicated that the crews' actions, in their attempts to recover the aircraft, were not the same. Maybe the accidents weren't all that similar. Investigators broadened their focus.

All the cargo loaders were re-interviewed. It became clear that it was extremely unlikely that the load on this aircraft could have shifted . Maintenance records were combed over in much greater detail. Mechanics who had worked on the aircraft were interviewed. Now the pieces started coming together and focus sharpened around maintenance work performed on the flight controls. Eventually the data revealed that maintenance was done on the elevators and a control rod was improperly attached. As the bolt loosened, the crews lost control of the elevators and the aircraft could not climb. This theory of the accident matched the FDR data and was ultimately determined to be the probable cause of the accident. As a result, the NTSB recommended inspection of the entire DC-8 fleet and similar problems were found on eleven aircraft.
Moral of the story: Whether troubleshooting an aircraft maintenance problem or investigating probable cause of an accident, it's important to gather all available information first. A rush to judgment can lead to errors and waste time and money.

US plane crash experts probe beyond black box



While the Pakistani plane crash investigators normally base their inquiry reports on mere black box findings in a bid to catch a clue from the conversation of the crew on board, the American National Transportation Safety Board (NTSB) probing teams also take into account factors such as rosters and medical histories of the flying squads to evaluate the probability of a human error.

Other before-the-accident dynamics, which are attached a high degree of importance in the US, are the working environment of the crew members, the possibility of physical/mental fatigue among the airline staffers on board such flights and their habits such as the intake of alcohol and drugs, etc.

The American crash investigators also calculate the impact angles to help determine the luckless plane's pre-impact course and attitude, besides gathering all pertinent weather data from the US National Weather Service. These specifics are then conveyed to the local media on a regular basis by a state public affairs officer and a member of the investigating team.

Unlike Pakistan, where inquiry reports of such crashes or accidents either never surface or take years to be unveiled, only confirmed and factual information is released to the media by the personnel deputed for this job in the United States. This is done to prevent any media speculation over the cause of the disaster.

These NTSB experts then examine the airframe wreckage and the accident scene, inspect the engines and study the components of the ill-fated plane's hydraulic, electrical, pneumatic and associated systems.

They also scrutinize the instruments and elements of the flight control system. Investigating catastrophic airline crash sites for the last 43 years, the NTSB operates with strength of just 400 experts, who compile a reconstruction of the air traffic services given the plane, including

acquisition of Air Traffic Control (ATC) radar data and transcripts of controller-pilot radio transmissions.

To evaluate the survival factors, these American plane crash experts also do a documentation of the impact forces and injuries, evacuation, community emergency planning and all crash-fire-rescue efforts.

Equipped with state-of-the-art wrenches, screwdrivers and devices peculiar to their specialty, all these US experts carry flashlights, tape recorders, cameras, lots of extra tape and film. The investigating teams also hold a public hearing as part of a major transportation accident probe. The purpose of the hearing is not only to gather sworn testimony from the subpoenaed witnesses on various issues, but also to allow the public to observe the progress of the investigation.

Each investigator is a specialist responsible for a clearly defined portion of the accident investigation. The Washington DC-based NTSB 'Go Teams' investigate about 2,000 aviation accidents and incidents a year, besides effectively probing and identifying the causes behind about 500 accidents in other modes of transportation like railways, highways and marines.

In case of rail accidents, locomotive engineers, signal system specialists and track engineers head the investigation teams, while the specialists at a highway crash include a truck or bus mechanical expert and a highway engineer.

Eventually, after a series of tests and analysis, a factual report is compiled with input from each member of the investigation team, so that the accuracy of the report is not compromised.

An abstract of that report, containing conclusions, probable disaster causes and safety recommendations, is then placed on the National Transportation Safety Board website under the head of "Publications".

Witnesses: Mechanic involved in helicopter crash a hero

From Salt Lake City new details have emerged about a deadly helicopter and one person in particular who tried to rescue those involved.

Three people were injured in that crash, in addition to the man killed. Now, KSL news has learned one of those men was injured while trying to get to the other victims.

Initial reports described Randall Ranson as a mechanic in the wrong place at the wrong time during the crash in the general aviation area of Salt Lake International Airport. Now, witnesses are stepping forward, saying Ranson was running toward the wreckage to save a critically injured man when there was an explosion.

Around 3:30 p.m. Friday, three men were attempting to load a helicopter on a trailer when one of the skids slipped of the side. Witnesses say the rotor then hit the truck and broke apart, sending debris flying.

That's when Ranson came running out of the hangar where he was working, trying to pull Tom Kalis to safety.

"Just as he was reaching out for him the crash erupted into fire and Randall sustained some pretty severe injuries," says witness Robert Carmichael. "It takes a special person to put themselves aside and in harms way for others that are in need."

Kalis died at the scene. Ranson suffered burns and was rushed to the hospital. Pilot Jared Kump and co-pilot Darrin Kalis, Tom Kalis' brother, were injured as well.

The NTSB is investigating the crash. It could be several weeks before their final report is released.

http://www.ksl.com/index.php?nid=148&sid=11599652&hl=17

US to overhaul airline pilot rules

Congress last Friday approved far-reaching US aviation safety legislation developed in response to a deadly commuter airline crash in western New York state last year. The safety measures apply to all airlines and are the first comprehensive attempt in decades to revise rules governing pilots.

They would force airlines to hire more experienced pilots, investigate pilots' previous employment more thoroughly and train them better. The legislation also requires a major overhaul of rules governing pilot work schedules to prevent fatigue.

The Senate approved the measure without debate, following similar action by the House late Thursday night.

President Barack Obama is pleased Congress has acted 'to ensure that we will use the best available evidence to make our aviation system as safe as possible' and plans to sign the bill into law, White House spokesman Nick Shapiro said.

The impetus for the safety measures was the crash of Continental Connection Flight 3407 near Buffalo-Niagara International Airport on Feb 12, 2009. All 49 people aboard and one man in a house were killed.

A National Transportation Safety Board investigation faulted actions by the flight's pilots and deficiencies in pilot hiring and training by Colgan Air, the regional carrier that operated the flight for Continental Airlines.

All of the past six fatal airline accidents in the US involved regional carriers. Pilot performance was a contributing factor in four of those cases.

Major airlines are increasingly outsourcing short-haul flights to regional carriers, which now account for more than half of all domestic flights.

Members of Congress praised the friends and family members of the victims of Flight 3407, who have lobbied relentlessly over the past 17 months for the safety measures.

Transparency of Australian/European Aviation Safety Oversight Called Into Question

Aircraft Engineers International (AEI) welcomes the news that the Australian Licensed Aircraft Engineers Association (ALAEA) has been successful in its three year legal battle against the Australian Civil Aviation Safety Authority (CASA), in order to gain access to safety related audit reports of CASA approved foreign maintenance bases. The legal challenge arose after poor quality maintenance was discovered on Qantas aircraft after being maintained at approved facilities in Singapore and Hong Kong. One Qantas aircraft allegedly departed an approved foreign maintenance organisation with over 450 open defects. The maintenance facilities have a stamp of approval from the Australian Aviation Authority (CASA) as well as additional approvals from various aviation authorities around the world.

Due to the seriousness of the safety lapses and concern at how these companies obtained a Government seal of approval, the ALAEA using the freedom of information act requested all CASA audit reports on the companies concerned. The response from the Australian national aviation authority to this and other similar incidents was to spend over 300,000 Australian tax payer's dollars trying to prevent the release of information into the public domain.

The implications of this case are far reaching and will eventually take on a global perspective. The evidence produced so far clearly highlights a standard of work well below that which is acceptable, yet the organizations concerned continue to operate under multiple approvals obtained from various national aviation authorities around the world. In fact, there is a link to EASA (European Aviation Safety Agency) who have issued European stamps of approval to the companies in question.

AEI have been campaigning for some time on the issue of European aviation safety and transparency. European regulators supported by the EU continue to maintain that audit information is commercially sensitive and could potentially be damaging to an airline operator. Yet whilst this

information remains withheld more and more, European airlines make use of cheaper, EASA approved foreign based maintenance facilities.

Of-course in principal this is perfectly acceptable as long as the facilities do in fact come up to and align with European standards. AEI General Secretary Fred Bruggeman said that "the outsourcing of maintenance to cheaper overseas facilities can be positive in terms of competition and will undoubtedly force airline management to look for innovative ways to improve efficiency and reduce costs. However, a level playing field must prevail as far as safety standards are concerned in order to protect the public. Double or false standards cannot be tolerated."

ALAEA meanwhile have for some time suspected that there is cooperation between CASA and Qantas that goes way beyond an operator/regulator relationship. The real answer may well be close to the suspicions raised by ALAEA Federal Secretary Steve Purvinas. He said "I suspect that CASA are under industry pressure to give cheaper overseas maintenance facilities a clean bill of health because they are a cheaper alternative to Australian facilities."

This is in fact the real issue here. How have we allowed government agencies, financed by tax payer's money to fail in their primary task of protecting the public. The remit of any aviation authority or agency is safety first, the remit does not include helping airlines achieve greater profits at the expense of SAFETY.

AEI have requested copies of all audit documentation relating to the EASA approval of the companies involved. The Today Tonight expose (Flying Blind) can be viewed on the AEI website. http://www.airengineers.org

The Risk of the Routine

One third of the way through deployment, our HSL detachment aboard a Ticonderoga-class cruiser was firing on all cylinders. The night shift started out routinely: Launch the helicopter at 1600 and recover it at midnight. Like many nights, with our SH-60B airborne, executing its mission, the tasking in our maintenance shop was light. It appeared this night would be uneventful. When the aircraft landed, we geared up for the usual engine

water-wash, straighten, fold, and traverse evolutions.

This sequence, although consisting of many moving parts, had become routine. We had done these procedures (sometimes twice a day) for more than a month. "Let's get this done as soon as possible" had become the standard. Unfortunately, this complacency turned out to be the main ingredient in a recipe for disaster.

We had completed the engine water-wash and were starting the straightening evolution when the flight-deck director (FDD) tasked a junior airman and me to remove the chocks and chains on the port side of the aircraft. I'd done this simple task every night for the last month. What could go wrong? The critical change of adding a new partner for the evolution seemed insignificant to me—I just went on with my usual routine.

We were down to one of the last aircraft straightening steps: aligning the tail wheel over the flight-deck track-slot. The FDD (a junior petty officer in training, shadowed by the LPO) directed the flight-deck crew to remove chocks and chains. I ran to the main mount chains, released the locks, and, to save time, flipped the outboard hooks of the chains in the padeyes, while jerking the leading edge of the chain toward my blind side. Not realizing my partner was directly behind me, I swung the locking mechanism directly toward his face.

It took a few seconds to understand what I just had done. The chain hit him square in the mouth, cutting open his lip and knocking out a tooth. I dropped the chains and quickly tended to my shipmate. I simultaneously yelled to the FDD, "Hold on—stop!" yet no one on the starboard side heard my call for help.

The FDD proceeded to move the aircraft with the port chock in place. I quickly removed the remaining chock and returned to the injured airman. Meanwhile, the FDD finished moving the aircraft and secured it at the flight-deck maintenance line.

Another maintainer, working on the opposite side of the aircraft, caught a glimpse of my injured shipmate lying face down and yelled, "Man down!" The FDD secured the aircraft and checked my partner for disorientation and head/neck injuries. We discovered that two more teeth had been damaged severely. The severity of this situation hit me when we lined up

for a FOD walk down.

Typically, we do these procedures before each flight, ensuring there is no debris to cause a hazard to the aircraft or personnel when the rotors are engaged. This time, however, we were looking for pieces of my friend's missing teeth on the flight deck. We found a front-upper tooth and the cap to another in pools of blood. In an effort to salvage the teeth he had lost, we rinsed both pieces of FOD and placed them in a MAF bag.

My carelessness caused my friend to endure two major dental reconstructions, including implants. He also missed two weeks of work while temporarily assigned to the aircraft carrier for follow-on care.

Complacency kills, or in this case, it wounds. The fact that we do the same thing repeatedly doesn't make it any less dangerous or right (after all, there is such a thing as a "perfect mistake"). Second, I failed to alert the flight-deck crew of the man-down situation. I should have run to the other side of the aircraft immediately and stopped the evolution, ensuring that every member of the crew knew we had a man who needed help.

Third, crew coordination is vital. My partner and I could have avoided this hazard by briefing the evolution before starting the task. Petty Officer Noble works in the AT shop at HSL-49. Analyst comment: Moving aircraft without everyone's verification that chocks and chains are removed is, as this story points out, very dangerous. If positions on the deck preclude direct, line-of-sight communication between the FDD and crew, you should discuss relay signals during the brief.

Reviews of Human Factors and Ergonomics is now online!

Reviews of Human Factors and Ergonomics, Volume 5, contains eight chapters; in Editor Frank Durso's words: "each of these offerings is a seamless piece of scientific cloth in which there is no stitching that binds basic and the applied. . . . If one imagines a grid

with fundamental concepts and methods as the rows and environments as the columns, one can see that some chapters have taken a broad slice down the columns, some have sliced through the row, and some have focused on the intersection of the concept and the environment.

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